MIS Quarterly

RESPONSE TO JONES AND KARSTEN, "GIDDENS'S STRUCTURATION THEORY AND INFORMATION SYSTEMS RESEARCH"

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In a recent article published in *MIS Quarterly*, Jones and Karsten (2008) provide a thoughtful and measured review of the application of Anthony Giddens's theory of structuration in information systems research. Their summary of the theory, some of its criticism, and their recommendations for those dedicated to applying the theory in information systems scholarship are cogent and useful.

In this response, however, I would like to take issue with some aspects of their article. First, I will argue that Jones and Karsten's characterizations of adaptive structuration theory (AST) and the approach to research AST advocates are too narrowly drawn. Second, I will raise some questions with their contention that structures exist only as memory traces, a conclusion that has important implications for information systems research and design in general.

Adaptive Structuration Theory Is Neither Functionalist Nor Positivist

I believe Jones and Karsten have taken an overly narrow reading of AST and associated empirical work, portraying it as organized around an "agenda heavily oriented to deterministic, functional research" (Jones and Karsten 2008, p. 146). I would argue that this is simply not the case.

As Jones and Karsten observe, AST was not meant to directly translate Giddens's (1979, 1984) theory into an information systems context. Instead it drew on an amalgam of scholarship, including Strauss's (1975) negotiated order perspective, Barthes' (1974), structuralism, and work in conversational and discourse analysis. Our belief was that Giddens's theory, along with other social theory, was too lacking in specification to actively guide research (for arguments along this line, see Kontopoulos 1993; Sewell 1992).

AST is organized around a set of concepts (features, spirit, appropriation moves, attitudes toward the technology, instrumental uses, etc.) that are meant to be applied generically in the study of IS implementation and use, as well as in other contexts. These concepts are not variables in the traditional sense. We were (Poole and DeSanctis 1990; DeSanctis and Poole 1994) and continue to be (Poole and DeSanctis 2004) explicit in arguing for a social constructionist and reflexive view of these concepts. At base these concepts describe the process by which structures associated with an information systems are produced and reproduced in social interaction and any theory or explanation based on AST should recognize this.

This does not, however, mean that these concepts cannot be studied via quantitative as well as interpretive methods. AST in particular, and structuration theory in general, can be illuminated by multiple methods, as our review of extant research on structuration in IS illustrated (Poole and DeSanctis 2004).

Jones and Karsten seem to adopt a dichotomous view of research methods that divides them into positivistic and interpretive-critical, with a clear dividing line (not to be crossed) between them. This has been a common move in the social sciences. There is, however, another way to look at methods, as Lee (2001), Mingers (2001), Trauth and Jessup (2000), and the advocates of mixed methods have shown: methods of different types can be blended so long as we remain judicious concerning their assumptions and aware of the limitations of what various methods can establish. We believe that Mingers makes a reasonable claim when he argues, "it is possible to detach research methods (and perhaps even methodologies) from their paradigms and use them, *critically and knowledgeably*, within a context that makes different assumptions" (p. 243).

Poole and DeSanctis (2004) discussed a distinction between functional analysis and constitutive analysis that was at the foundation of the Minnesota studies. Functional analysis (not to be confused with the functionalism that Giddens [1977] critiqued and that Jones and Karsten charge AST with incorporating) focuses on what Giddens termed the system level and depicts it as a network of causal, moderating, and correlational relationships among abstract variables. Functional analysis reflects the scientists' perspective on the system and results in a map of observable relationships and influences. Although quantitative methods are commonly associated with functional analysis, qualitative methods have been used to derive functional models. Constitutive analysis is concerned with how the system, variables, and relationships that compose them are socially constructed. This level of analysis explores the structuring processes that create and sustain the patterns identified in functional analysis. Interpretive studies are needed to illuminate the constitution of the system.

Functional and constitutive analyses are complementary. Each establishes important findings about structuration. Functional analysis rigorously establishes regularities and patterns in systems and allows research to test the impact of structuration with large samples, as Poole, Holmes, and DeSanctis (1991) did in their study of GDSS impacts on conflict management in groups. Constitutive analysis goes to the heart of the structuring process that is responsible for regularities and patterns. Constitutive analysis discovers

processes and constructs that can later be formalized in functional analysis.

Does functional analysis get at structuration directly? No, but it is possible to operationalize symptoms of structuration processes so that they can be studied quantitatively. For example, Poole, Holmes, and DeSanctis used analyses based on interaction coding to identify variations in uses of a group decision support system across groups and found that they were related to outcome variables. This study provided evidence for the proposition that structuring processes could produce meaningful variation in group outcomes. A later study more directly focused on structuration processes themselves (Poole and DeSanctis 1992). This study used a coding system for appropriation moves (see also DeSanctis and Poole 1994), which I expect Jones and Karsten would regard as a positivistic method of identifying structuration processes. However, our coding was done in a flexible way that responded to the nuances of the interaction by incorporating new categories inductively. Moreover, the appropriation move system was based on classical rhetorical tropes that had been derived by practitioners of rhetoric over the centuries and so has a claim to intersubjective validity. The categories were not simply the inventions of distant positivists. In our later field research, we consulted with users about the meaning of various appropriation moves and their interpretation of the GDSSs to provide a check on our interpretations.

In our approach to functional analysis, we hewed to a position that has been characterized as "post-positivism" (Miller 2000; Phillips 1987, 1990). Post-positivism recognizes the flaws in classic positivism and acknowledges social construction, but also assumes that knowledge can best be gained through search for regularities and causal relationships among components of the social world. As Miller (2000, p. 59) notes, post-positivism is consistent with social constructionism in two ways. "First, many post-positivists would argue that the *process* of social construction occurs in relatively patterned ways" that are amenable to scientific investigation. Second, "social constructions are regularly 'reified' and treated as objective by actors in the social world," and these reifications give rise to regularities that can be studied scientifically." Critical realism (Bhaskhar 1998), recently articulated as a philosophy for IS research by Smith (2006), provides a well-reasoned philosophical foundation for post-positivism.

This suggests that social construction might be studied using traditional empirical methods. Several approaches are available. First, evidence for social construction can be found by looking for variance within conditions of an experiment. Poole, Holmes, and DeSanctis (1991), for example, found

variations in the use of a GDSS by groups within the same condition which suggested they were appropriating the technology differently. Second, typologies based on subjective reactions to IT, interviews, user protocols, and other user-centered sources of information can give us insight into the meanings of IT that users and others socially construct. Third, process studies can focus on social construction over time and the processes through which it occurs. And fourth, researchers can take the results of qualitative studies and explore them quantitatively (see, for example, Leonardi 2007).

Several studies in the Minnesota research program employed interpretive approaches based on unstructured observation of live and recorded sessions, interviews with users, and analysis of artifacts of system use (e.g., DeSanctis et al. 1991-1992; Poole and DeSanctis 1989; Poole et al. 1994). See DeSanctis et al. (2008) and Poole and DeSanctis (2009) for a more complete review of the studies and procedures that were used to work out AST and conduct research within it. Most of the interpretive studies conducted by the Minnesota GDSS project were not published in mainline IS journals, and so it is not surprising that Jones and Karsten drew the conclusion that they did, based on a review of journals. However, other scholars have published studies in mainline IS journals that used AST as a framework for an interpretive study (e.g. Majchrzak et al. 2000).

The approach AST takes is consistent with Giddens's own position. He has stated,

> I do not try to wield a methodological scalpel…I do not believe there is anything in either the logic or substance of structuration theory which would somehow prohibit the use of some specific research technique (Giddens 1984, p. xxx).

Indeed, a perusal of Giddens's works shows that he readily uses survey and archival data and does not restrict himself to ethnographic approaches.

The Question of Whether Structures Can Be Embodied in Information Technologies Is Not Closed

Jones and Karsten raise an important issue in their discussion of the ontological status of structure in structuration theory. They advocate the position that structures do not exist except in actors' memory traces. A similar position has been advanced by Orlikowski (2000; see also Boczkowski and

Orlikowski, 2004), who advocates the use of practice theory to understand information technology and new media. Consistent with Giddens, the *practice turn* argues that technologies are interpretively flexible and that structures exist only through being enacted by the "ongoing practices of a community" (1984, p. 367). This viewpoint is contraposed to the notion that structures may be embedded in artifacts such as information technologies, an idea attributed to AST, among other theories.

The issue of whether structures can persist outside ongoing practices is important for scholars of information systems and communication technologies. These technologies are designed to enable and constrain human activity, and theorizing the source of their structuring potential is a significant move in explaining their impacts.

Jones and Karsten's analysis centers on Giddens's well-known statement that structures exist only in "memory traces" (e.g., 1984, p. 25). Giddens seems to have come to this idea through combining the paradigmatic view of structure advanced by the French structuralists, who influenced his initial formulation of structuration quite strongly (Giddens 1977, 1979) with his methodological individualism, which emphasized the primacy of agency and the practices of human agents as the source of society. Without going into detail on the tensions inherent in this interesting combination of seemingly contradictory theoretical positions, we can assert that the issue of the ontological status of structures is hardly settled by Giddens's argument, nor is it put to rest convincingly by the practice theorists' analyses. Developing a full scale critique of these two points of view is beyond the scope of this brief commentary, so instead I will try to make a positive case for an alternative view.

There are several reasons to advocate the view that structures can take other forms than memory traces. First, many institutions preserve structural "traces" in physical artifacts. The U.S. legal system has thousands of books full of codes, regulations, and laws that are potential structures in legal argumentation. This legal institution is so complex that no lawyer can practice without using these books (or today their digital equivalents). So is the structure in the memory traces of the attorney? Certainly knowledge and skill about how to activate the code and to use it in legal arguments reside in memory traces, but the written record itself still must be consulted, because no attorney could memorize all its rules or be aware of the resources that the legal argument affords. The structure seems to be in the relation between the lawyer and the written code as it is put into practice, rather than solely residing in the actor or the practice of reading the books and doing law.

Second, research on distributed intelligence and cognition suggests that memory is not just in our heads (Salomon 1991). Instead the "surround" in which memories are formed—including the place and the tools we use—play an important role. Educational researcher David Perkins (1992) puts it as follows:

> Human cognition at its richest almost always occurs in ways that are physically, socially, and symbolically distributed. People think and remember with the help of all sorts of physical aids, and we commonly construct new physical aids to help ourselves yet more (p. 133).

He summarizes two principles that guide the distributed intelligence perspective:

1. The surround—the immediate physical, social, and symbolic resources outside of the person—participates in cognition, not just as a source of input and receiver of output but as a vehicle of thought. The surround in a real sense does part of the thinking.

2. The residue left by thinking—what is learned—lingers not just in the mind of the learner but in the arrangement of the surround as well; yet it is just as genuinely learning for all that. The surround in a real sense holds part of the learning (Perkins 1992, p. 135).

For example students using journals to document their active experimentation learn and recall best when they have the journal at hand, not only because it contains notes, but also because it was the tool they used for thinking the problem through (Perkins 1992, Ch. 6). Novel ideas adapted to new problems emerge from insights previously recorded in the journal. This suggests that memory goes beyond just the brain and that an agent's memory traces may indeed be partially bound up with the technologies or other contextual feature in which they are formed.

Third, people learn structures and structuring moves from information technologies. In our field studies of GDSSs, users reported that they had been made aware of techniques by using the GDSS (DeSanctis et al. 2008). Users also commented that features such as anonymous entry of ideas leveled the playing field by letting them make comments they would not have made in an unmediated meeting (DeSanctis et al. 2008). It is no doubt the case that the users' skills and guidance by facilitators activated the structuring potential of these features. However, the features themselves triggered the activity in the first place as users became aware of

possibilities they had not previously known existed. At the least, we could say that the GDSS supplied affordances for action. These were consciously designed into the GDSS by designers who wanted to trigger certain structuring activities. It is difficult to comprehend, then, how the GDSS artifact does not make a contribution to the structuration process. It is not simply interpretively flexible, it delivers norms and patterns for behavior to the user.

Fourth, there have been experiments in "intelligent" groupware, which provides guidance for users. Limayem and DeSanctis (2000; see also Limayem et al. 2006) reports an experiment in which tutorial guidance was built into the GDSS that walked subjects through the procedures. Such guidance (a level 3 GDSS in the terminology of DeSanctis and Gallupe 1987) plays an active role in meetings. In this case, the IT becomes a sort of agent. Its agency is certainly not of the same type as human agency, but nor is it only what Pickering would call material agency (Chae and Poole 2005). In this case, structures are embedded in the IT and the operation of the IT channels structuration.

I would submit that these points suggest that the question of the material basis of structures is neither simple nor settled. This is an important question for the IS discipline and for others, and deserves more extended debate.

Conclusion

Giddens's work has been of immense importance in many disciplines, and Jones and Karsten's article clearly demonstrates why. Their suggestions for new areas of inquiry based on Giddens's version of structuration are intriguing and should stimulate novel lines of research. There are still many questions open concerning structuration theory and its application to information systems, and it is to the benefit of all that debate occurs.

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